



Contribution ID: 1170

Type: **Poster Presentation of 1h45m**

Design, Construction and Testing of Reduced Insulation Solenoids for Fusion

Thursday 31 August 2017 13:45 (1h 45m)

Princeton Plasma Physics Laboratory is currently developing a targeted superconducting magnet R&D program in support of its leading design studies of Fusion Nuclear Science Facility (FNSF) and Pilot Plant using the most promising magnetic confinement configurations including Spherical Tokamak and Stellarator. An innovative magnet design approach is required to ensure success of the FNSF, focusing on capabilities to close the gap between rapid advances in High Temperature Superconductor (HTS) and the maximal fusion energy extraction from ITER-like burning plasma development. Irradiation damage to organic insulation in the coil winding pack is a critical issue for the next step fusion reactors where orders of magnitude higher neutron fluence than that in ITER are expected. On the other hand, slow current charging time is an issue in a fully non-insulation coils. We present design, construction and cryogenic testing of mid-level field in-house built Nb₃Sn solenoid coils with a novel design of significantly reduced organic insulation in the coil winding pack. Coil behavior during current charging and discharging will be investigated for flux swing needed from the FNSF CS magnet design.

Submitters Country

United States

Author: Dr ZHAI, Yuhu (Princeton Plasma Physics Laboratory)

Presenter: Dr ZHAI, Yuhu (Princeton Plasma Physics Laboratory)

Session Classification: Thu-Af-Po4.02

Track Classification: B1 - Superconducting Magnets for Fusion